Research Article

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VARIATION OF HAEMATOLOGICAL PARAMETERS IN DIFFERENT DHATU SARA INDIVIDUALS AS PER SEX

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Received on: 25/05/15 Revised on: 13/06/15 Accepted on: 28/06/15

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DOI: 10.7897/2277-4343.065112

ABSTRACT

Sara is explained in context of 'Dashvidha Pariksha' in Charak Samhita to measure the strength (Bala) of an individual. Haematological parameters are most frequently used in routine investigations. It is obvious that both Sara and haematological parameters are used in ancient and modern science therefore, this study was planned to assess the variation in haematological parameters of different Sara individuals as per sex. Total 254 (156 males and 98 females) healthy individuals between the age of 18 to 35 were included in this study. Assessment of Sara was done in terms of total Sara score by questionnaire type proforma specially designed for this study. Haematological values provide important information about health status of a person like anaemia, polycythemia, any type of infection and others. Haematological parameters were analysed by automatic haematology analyzer. On correlation of the total Sara score and haematological values in male and female, significant variation in total Sara score as well as in haematological values was observed.

Keywords: Sara Pariksha, Haematology, Strength, Sex.

INTRODUCTION

In this hasty life, people are reluctant to have a proper consideration towards the health and nutrition therefore good immunity is mandatory for prevention of disease. Seven Dhatus have been described in Ayurveda. Rasa is minutest and essential fraction of properly digested food. Rakta Dhatu is produced from Rasa, Mansa from Rakta, Meda from Mansa, Asthi from Meda, Majja from Asthi and finally Shukra from the Majja. Sara is the essence of Dhatus (Vishuddhataro Dhatu), which signifies the ultimate quality of Dhatu and excellent functional aspect[1]. Sara has been mentioned for the assessment of strength (Bala) [2] and life span (Ayu)[3] of patient. 'Bala' means biological strength or power of resistance against the disease; it can be related with immunity of the individual. Predominance of particular Dhatu, the number of Dhatu Sara present in the body of an individual will be directly proportional to the power of resistance of the individual. That is why; Sarva Sara individuals have higher resistance in comparison to Madhyam Sara or Avara Sara individuals[4]. During formation of foetus all the Dhatus are formed, Dhatu which shows maximum characters mentioned in Samhitas are called as best Dhatu of that individual. Dhatu Sarata or tissue excellence is a quality assessment of seven Dhatu. Examination of Dhatu Sarata is done at physical and psychological level.

As described by Acharya Charaka, it is fallacious to consider an individual to be strong or weak either by his appearance like his plump or emaciated body or by large or small size of his body. Some people having a small size and emaciated body seem to be strong. Thus one should examine the individual in respect to Sara or excellence of his Dhatu[5]. So, it is quite clear that inherent power of a person cannot be assessed by bulk and size of the body, but it is only judged by the Sara examination. Individuals on the basis of Sara have been classified into various categories depending upon the predominance and quality of particular Dhatu in the body, except the Satva Sara which is based on predominance of Satva (psychic factor) in the body. Following eight Sara have been described in texts of Ayurveda i.e. Twak Sara, Rakta Sara, Mansa Sara, Meda Sara, Asthi Sara, Majja Sara, Shukra Sara and Satva Sara[6, 7]. Acharya Kashyap has also described Oja Sara[8].

The higher percentage of characteristics represents the good quality of Dhatu. Examination of the Sarata of Dhatu is helpful for the preventive and curative aspect i.e. the Dhatu which is of weak quality in an individual, may be treated with good diet to increase the strength of that Dhatu.

Acharya Charaka has also described that the individual having the excellence of all Dhatus (Sarva Sara) have great strength, happiness, resistance to difficulties, self confidence in all enterprises, virtuous acts, and firm and well-built body, correct gait, resonant melodious and high pitched voice, happiness, power, wealth, enjoyment, honour, slowness of aging process, resistance to diseases, having more progeny and longevity[4].

Haematological parameters are in routine use for the assessment of health status among all age group individuals. Alteration in the haematological values leads to cause various diseases and impairs the quality of life. For example decrease in these values leads to anaemia causing decreased oxygen carrying capacity of blood which is the root cause of so many diseases while increase may lead to polycythaemia.

The present study is an effort to evaluate and correlate the possible variation of haematological parameters as per sex and Dhatu Sarata. Few studies have been done in reference to assessment of individual Sara but till date no study has been carried out for the comparative analysis of Dhatu Sarata altogether. Taking consideration of the hypothesis that Sara score and haematological parameters will be variable in different sex, this study has been designed. One can analyze the haematological status of the individuals after the assessment of Sara. On the basis of Dhatu Sarata one can predict the health status and proneness of an individual for suffering to particular diseases in future. This was administered to 254 healthy subjects who have satisfied the inclusion criteria were enrolled for this study after getting their consent. On the basis of the observations of this study, it may be inferred that Dhatu Sara score has a strong correlation with sex and haematological parameters.

MATERIAL AND METHODS

The Ethical Committee of Institute of Medical Science, Banaras Hindu University and PG Medical board, Institute of Medical Science, Banaras Hindu University, Varanasi has approved this study vide letter No.Dean/2012-13/361 dated 15.12.2012. The present study has been carried out in Department of Kriya Sharir, Faculty of Ayurveda, IMS, BHU Varanasi.

Selection of volunteers: This study has been done in healthy individuals. For this study the individuals were selected from different departments of faculty of Ayurveda IMS BHU which included BAMS students, MD, PhD scholars, faculty members and some individuals from the local community of Varanasi.

Sampling method: The volunteers were provided detailed information about purpose and methods used in the study and written consent was obtained before registration. These individuals were thoroughly examined for the assessment of health. A detailed proforma was used to record the health status including history taking and physical examination.

Assessment of Sara: In this study for the assessment of Sara a validated questionnaire and software was used for its consistency as a tool. This was done by pro-forma prepared by Chandar Prakash Gunawat et al (2014)[9] based on characters mentioned in different texts of Ayurveda and Brihat Samhita. The pro-forma has been designed in such a way that each trait/ character as described in texts was transformed into simple questions maintaining the original idea intact. The respondents had to record their agreement or disagreement with the question in a column provided for the purpose in the form of One or Zero. The scores to be allotted were specified against the statement in a separate column for a particular Sara. At the end of this exercise, the respondents could calculate the scores for different Sara themselves and could understand the Sara dominance in the form of percentage with the help of simple mathematical calculations.

Percentage dominance of a *Sara* in an individual was calculated on the basis of the total scores obtained for each Sara by simple mathematical calculation as shown below:

Total marks scored by an individual for a Sara × 100 / Total marks allotted to that Sara

The total obtained score of all the Sara of an individual was counted.

Haematological Parameter estimation:

All the 19 haematological parameters were estimated by Automated Haematology Analyzer pocH-100i of Sysmex (Japan). Stromatolyser-WH and Cell pack (whole blood diluent) chemicals were used for the estimation of these haematological parameters.

RESULTS

After assessment of Sara, we have observed that each volunteer had scored some points for each Sara. Therefore, we could not designate any class of volunteers to be dominant of one Sara. Therefore, we have calculated total Sara score and divided the total Sara score in to two groups as per sex.

Table 1: Comparison of Mean±SD of different Sara scores as per sex

Sara	Mean±SD		Between Sara group comparison Unpaired t-test	
	Group-I (Male) (n=156)	Group-II (Female) (n=98)	t- value	p-value
Twak	9.36±2.401	9.34±2.056	0.052	0.959
Rakta	20.96±4.734	16.44±4.364	7.586	<0.001
Mamsa	21.20±6.473	19.51±6.815	1.970	<0.050
Meda	9.43±2.869	9.04±3.015	1.022	0.308
Asthi	9.37±3.607	7.46±3.390	4.183	<0.001
Majja	7.05±1.795	5.98±1.436	4.955	<0.001
Shukra	11.99±3.498	10.64±3.099	3.123	0.002
Total	89.37±17.593	78.41±16.774	4.887	<0.001

Mean±SD of each Sara score and total Sara score was higher in males in comparison to females. On statistical analysis, it was found significant in all Sara except Twak Sara and Meda Sara. When comparison of these Sara score was done between male and female, statistically highly significant ($p<0.001$) difference was observed in Rakta, Asthi, Majja and Shukra Sara ($p=0.002$) and total Sara score ($p<0.001$) while in Mamsa Sara score statistically significant change ($p=0.050$) was noted. (Table 1)

Table 2: Mean±SD of Haematological parameters as per sex

Parameters	Mean±SD (Min, Max)		Between Sara group comparison Unpaired t-test	
	Group-I (Male) (n=156)	Group-II (Female) (n=98)	t-value	p-value
WBC	7.40±1.554	7.94±2.073	2.343	0.020
RBC	5.23±0.634	4.49±0.439	10.094	<0.001
HGB	14.76±1.413	12.11±1.233	14.774	<0.001
HCT	46.94±4.277	40.01±3.752	13.088	<0.001
MCV	90.30±9.276	89.91±8.215	0.338	0.736
MCH	28.32±3.170	27.32±2.944	2.484	0.014
MCHC	31.33±1.473	30.36±1.570	4.934	<0.001
PLT	217.30±70.376	247.28±65.672	3.368	<0.001
LYM%	31.39±7.708	31.23±9.169	0.150	0.881
MXD%	10.21±3.417	8.60±3.885	3.412	0.001
NEUT%	58.49±8.504	60.38±9.897	1.604	0.110
LYM#	2.27±0.617	2.34±0.550	0.889	0.375
MXD#	0.74±0.288	0.67±0.339	1.768	0.078
NEUT#	4.49±1.324	4.90±1.802	2.063	0.040
RDW-SD	47.66±8.635	48.34±10.014	0.568	0.571
RDW-CV	15.04±2.254	15.10±2.415	0.198	0.844
PDW	15.10±4.349	15.30±3.452	0.376	0.707
MPV	12.45±2.050	12.82±1.630	1.514	0.131
P_LCR	45.91±18.787	48.57±14.225	1.192	0.234

All the values of haematological parameters were observed higher in males, except total WBC count, platelet count and neutrophil count which was higher in females. On comparison between male and female groups, RBC, HGB, HCT and MCHC and platelet count was found statistically highly significant ($p<0.001$) while WBC, MCH, and total neutrophil count were observed statistically significant ($p<0.05$). These findings are evident from Table 2.

DISCUSSION

In present study the assessment of Sara is specially done to assess the level of seven Dhatus in the body therefore we have not included Sattva Sara (excellence of mind). The formation of Dhatu depends upon the Aharapaka and Dhatupaka. Male sex hormone (Androgens) can increase the basal metabolic rate about 10-15%, for this reason male have higher metabolic rate[10]. Androgen also stimulates erythropoiesis by increasing REF (Renal Erythropoietic Factor) production and also potentiates the action of erythropoietin[11] hence they have more erythrocyte and HGB concentration leading to higher incidence of Rakta Sarata. Sara examination is done for the assessment of strength (Bala). Increased in Sara score may be suggestive of increased strength[12]. In this study all those Dhatus having higher Sara score are well known factor for increasing strength. Higher testosterone level in male leads to increased muscular strength[13] and also important factor for stimulating erythropoiesis taking place in bone marrow, due to which higher Sara scores of Rakta, Mansa, Asthi, Majja and Shukra are noted in males while oestrogen decreases hepatic synthesis of globulin and depresses the erythropoietic response to hypoxia. That is why, in females, haematological parameters were found lower as compared to males[11].

Madhura Motagi et al concluded physiological variation of WBC count among women. High Total WBC count was found in women during proliferative phase compared to menstrual phase and secretory phase and significant high total WBC count and lymphocytes were in all the phases of women compared to men. This can be attributed to the female sex hormones[14]. In this study also increased value of WBC was noted in females as compared to males which confirms the findings of earlier workers.

CONCLUSION

It can be inferred that in each Dhatu Sara, the values of haematological parameters are higher in males as compared to females. Further, higher Sara scores in male is suggestive of more strength as compared to females.

ACKNOWLEDGEMENT

We acknowledge Praguna Singh, B.Tech 3rd year Scholar, Computer Science, Manipal Institute of Technology for his effort and cooperation for making Software and valuable suggestions.

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Cite this article as:

Gunawat C P, Gehlot S. Variation of haematological parameters in different dhatu sara individuals as per sex. Int. J. Res. Ayurveda Pharm. 2015;6(5):598-601 http://dx.doi.org/10.7897/2277-4343.065112

Source of support: Nil, Conflict of interest: None Declared